UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/405,328	09/24/1999	SANG-BUM KIM	678-362	9378

7590 06/18/2004

PAUL J FARRELL ESQ
DILWORTH & BARRESE
333 EARLE OVINGTON BLVD
UNIONDALE, NY 11553

EXAMINER	
LE, LANA N	

ART UNIT	PAPER NUMBER
2685	20

DATE MAILED: 06/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/405,328	KIM ET AL.	
	Examiner	Art Unit	
	Lana N Le	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-7 and 9-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *14-20* is/are allowed.

6)☒ Claim(s) *1,3-5,7 and 9-12* is/are rejected.

7)☒ Claim(s) *6 and 13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims1-7, 9-13 have been considered but are moot in view of the new ground(s) of rejection due to amendments filed 03/26/04, however the same references still read on the claimed subject matter.

Claim Objections

Claims 3 and 4 are objected to because of the following informalities: they depend on a cancelled claim 2. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1, 3-5, 7, 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blakeney, II et al (US 5,490,165) in view of Naruse et al (US 6,263,010).

Regarding claim 1, Blakeney II et al discloses a PN sequence phase searching apparatus in a multi-carrier CDMA mobile a communication system, comprising:

at least two PN sequence phase searchers 402A and 402B (figure 6) for searching for the PN sequence phase of one of at least two different band input signals using a plurality of different assigned search conditions and for outputting PN phase and energy information (col 18, lines 57-65); and

a controller 400 for assigning the plurality of different search conditions to the at least two PN sequence phase searchers (col 18, lines 43-51);

Blakeney II et al fails to disclose further an apparatus uses the same PN code phase values in the multi carrier CDMA mobile communication system, determining a minimum phase variation period based on the PN phase and energy information received from the PN sequence phase searcher wherein the different search conditions include phases and search periods corresponding to a plurality of PN sequence phase search starting points determined by dividing the entire phase area into a number of sections.

Naruse discloses an PN phase searching apparatus that uses the same PN code phase values within a PN period holding counter 234 during a power off interval (col 6, lines 45-54) wherein the same phase value is used in a multi carrier CDMA mobile communication system, for determining a PN variable search width according to the propagation delay time difference based on the PN phase and energy information received from the phase searchers (col 7, lines 23-40; col 10, lines 49-60); and different search conditions include phases and

search periods (col 7, lines 25-26) corresponding to a plurality of PN sequence phase search starting points since each phase searcher must start its search at a different point on the corresponding sector determined by dividing the entire phase area into a number of sections by substracting a certain number of chips based on a preset search width from an offset (fig. 6 & 9; col 7, lines 34-46; col 8, lines 25-29). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a variable PN minimum phase period and have specific search conditions such as search periods to the different searchers of Blakeney II et al in order to identify and determine the optimal search width value in each searcher element based on the propagation delay time difference corresponding to various sector sizes in which synchronization acquisition can be acquired in a short time due to offset value information.

Regarding claim 3, Blakeney II et al and Naruse et al disclose the PN sequence phase searching apparatus of claim 1 wherein Naruse et al further discloses the plurality of PN sequence phase search starting points (col 7, lines 34-46; col 8, lines 25-29) in the different search conditions are assigned to one PN sequence phase searcher.

Blakeney II et al further disclose different search conditions are assigned to the at least two PN sequence phase searchers 402A and 402B by dividing a PN sequence (col 8, lines 4-20) by the number of the PN sequence phase searchers 402A-402N (figure 6; col 18, lines 35-51). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have more than one phase searcher in order to more quickly search for a phase by evenly

distributing the PN sequence between the phase searchers and to speed up the searching process for the multiple band signals.

Regarding claim 4, Blakeney II et al and Naruse et al disclose the PN sequence phase searching apparatus of claim 1 wherein Naruse et al further discloses the plurality of different search conditions are set by dividing a PN sequence into predetermined periods and stored in the PN period holding counter 234 and the divided search periods T1-T3 are sequentially assigned to the PN sequence phase searcher (col 9, lines 36-50). Naruse didn't disclose at least two phase searchers. Blakeney II et al disclose at least two phase searchers (Figure 6). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add more phase searchers to Naruse et al in order to speed up the searching process for the multiple band signals.

Regarding claim 5, Blakeney II et al and Naruse et al disclose the PN sequence phase searching apparatus of claim 1, wherein Naruse further discloses the phase searcher perform a PN sequence phase search within a minimum phase variation period determined by the controller (col 7, lines 44-47). Naruse didn't disclose at least two phase searchers. Blakeney II et al disclose at least two phase searchers (Figure 6). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add more phase searchers to Naruse et al in order to speed up the searching process for the multiple band signals.

Regarding claim 7, Blakeney II et al discloses a PN sequence phase searching method in a multi-carrier CDMA mobile communication system,

comprising the steps of searching for the PN sequence phase of one of at least two different band input signals in parallel using a plurality of different assigned search conditions; outputting PN phase and energy information (col 18, lines 43-65).

Blakeney didn't disclose wherein the same phase values are used in the multi carrier CDMA mobile communication system, determining a minimum phase variation period based on the PN phase and energy information; the plurality of different assigned search conditions include phases and search periods (col 7, lines 22-26) corresponding to a plurality of PN sequence phase search starting points determined by dividing the entire phase area into a number of sections .

Naruse discloses within a PN period holding counter 234 during a power off interval (col 6, lines 45-54) wherein the same phase values are used in a multi carrier CDMA mobile communication system, determining a minimum phase variation period based on the PN phase and energy information (col 7, lines 23-40) and wherein Naruse further discloses the plurality of different assigned search conditions include phases and search periods (col 7, lines 22-26) corresponding to a plurality of PN sequence phase search starting points since each phase searcher must start its search at a different point on the corresponding sector determined by dividing the entire phase area into a number of sections by substracting a certain number of chips based on a preset search width from an offset (fig. 6 & 9; col 7, lines 34-46; col 8, lines 25-29). It would have been obvious to one of ordinary skill in the art at the time the invention was

made for the different search elements of Blakeney II et al to find the minimum phase variation period and to have different search conditions such as search periods and phase starting points in order to determine and set the search width value corresponding to various sector sizes or "sections" by correlating the phase-shifted short code with the pilot code of the pilot signal's time difference in which the search width is determined from.

Regarding claim 9, Blakeney II et al and Naruse et al disclose the PN sequence phase searching method of claim 7, wherein Blakeney II further discloses the plurality of different search conditions are set by dividing a PN sequence (col 8, lines 12-17) by the number of the parallel PN sequence phase searchers via search elements 402A-402N (col 8, lines 35-51). Naruse et al further discloses assigning corresponding phases produced by the division as the PN sequence phase search starting points of the phase searcher (col 7, 22-26).

Regarding claim 10, Naruse further discloses the plurality of different search conditions are set by dividing a PN sequence into predetermined periods and stored in the PN period holding counter 234 and the divided search periods T1-T3 are sequentially assigned to the at least two PN sequence phase searchers (col 9, lines 36-50).

Regarding claim 11, Blakeney II et al and Naruse et al disclose the PN sequence phase searching method of claim 7, wherein Naruse further inherently discloses the minimum phase variation period is determined by phase information corresponding to the highest energy.

Regarding claim 12, Blakeney II et al and Naruse et al disclose the PN sequence phase searching method of claim 7, wherein Naruse further discloses further comprising the steps of:

searching for the PN sequence phase of each input signal within the determined minimum phase variation period (col 7, lines 23-40); and transmitting PN sequence phases acquired in the search to an upper processor, after the minimum phase variation period determining step (col 7, lines 53-59).

Allowable Subject Matter

The following is an examiner's statement of reasons for allowance:

Regarding claim 14, the cited prior art Blakeney PN sequence phase searching method in a multi-carrier CDMA mobile communication system, comprising the steps of: searching for the PN sequence phase of one of at least two different band input signals in parallel on a plurality of assigned different search conditions and outputting information about PN phases and energies; Naruse further discloses sorting the energies of each searcher and comparing each max energy with a threshold varied with the number of PN sequence phase searches; assigning new corresponding search conditions to PN sequence phase searchers satisfying the threshold, and performing the PN sequence phase search with the new search condition if max energy satisfy the threshold and determining a minimum phase variation period based on the PN phase information.

However, the cited prior art fails to disclose further:

repeating the same process as upper case the predetermined number of times if max energy and frequency error satisfy the corresponding thresholds; determining a minimum phase variation period based on the PN phase information, if there's a PN phase which satisfies all of the conditions; assigning another search condition which includes another search window size and starting point to the PN sequence phase searchers which does not satisfy a threshold and resume PN phase search if max energy or frequency error does not satisfy the thresholds at any stage.

2. Claims 6 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

This is a RCE of 09/405,328. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it

is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Lana Le

September 20, 2003